IN THE CLAIMS

Please amend the claims as follows:

Claims 1-27 (Canceled).

Claim 28 (Previously Presented): A multi-carrier CDMA communication apparatus comprising a transmitter and a receiver configured to perform transfer of data, using a multi-carrier CDMA method,

said transmitter including:

signal modulation units for a number of sub-carrier groups, configured to perform frequency spreading for each sub-carrier signal of each channel constituting a sub-carrier group, based on a predetermined condition; and

time spreading units for the number of sub-carrier groups, configured to multiplex all signals after modulation processing and the frequency spreading for each sub-carrier signal, and perform time spreading with respect to the multiplexed signals for each sub-carrier signal, and

said receiver including:

time despreading units for the number of sub-carrier groups, configured to perform time despreading for each sub-carrier signal; and

signal demodulation units for the number of sub-carrier groups, configured to perform frequency despreading for each sub-carrier signal after the time despreading.

Claim 29 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 28, said signal modulation unit comprising:

a frame creation unit configured to create data frames comprising a known sequence, frame information, and data, for each sub-carrier group based on said predetermined condition;

a copy unit configured to generate data frames by the number of sub-carriers, by copying the data frame;

an information modulation unit configured to perform modulation processing with respect to each data frame;

a frequency spreading unit configured to perform frequency spreading with respect to each sub-carrier signal after modulation, based on said predetermined condition; and

a power control unit configured to perform transmission power control with respect to each sub-carrier signal after the frequency spreading.

Claim 30 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 28, each signal demodulation unit comprising:

a frequency despreading unit configured to perform frequency despreading for each sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate an absolute value and a complex conjugate of transmission line estimation results, to normalize the complex conjugate by the absolute value, to weight the sub-carrier signal by the normalization result, and to output the absolute value and the sub-carrier signal after weighting as an output;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after weighting, and to combine an absolute value for the sub-carrier group by adding all the absolute values; and

a path combining unit configured to multiply the sub-carrier group signal corresponding to each path by the absolute value of the respectively corresponding sub-carrier group, to thereby generate a sub-carrier group signal after path combining, by adding all the multiplication results.

Claim 31 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 28, said signal demodulation unit comprising:

a frequency despreading unit configured to perform frequency despreading in a unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate a complex conjugate of transmission line estimation results, to weight the sub-carrier signal by said complex conjugate, and to output the sub-carrier signal after weighting as an output;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after weighting; and

a path combining unit configured to add all the sub-carrier group signals corresponding to each path, to thereby generate a sub-carrier group signal after path combining.

Claim 32 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 28, said signal demodulation unit comprising:

a frequency despreading unit configured to perform frequency despreading in a unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate an absolute value and a complex conjugate of transmission line estimation results, to normalize the complex conjugate by absolute value, to weight the sub-carrier signal by the normalization result, to estimate an interference power for each sub-carrier signal after the frequency inverse conversion based on the known sequence, and to divide the sub-carrier signal after weighting by the interference power;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after the synchronization detection, and to generate an absolute value for the sub-carrier group by adding all the absolute values; and

a path combining unit configured to multiply the sub-carrier group signal corresponding to each path by the absolute value of the respectively corresponding sub-carrier group, to thereby generate a sub-carrier group signal after path combining, by adding all the multiplication results.

Claim 33 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 28, said signal demodulation unit comprising:

a frequency despreading unit configured to perform frequency despreading in a unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate a complex conjugate of transmission line estimation results, to weight the sub-carrier signal by the complex conjugate, to estimate an interference power for each sub-carrier signal after the frequency inverse conversion based on the known sequence, and to divide the sub-carrier signal after weighting by the interference power;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after the synchronization detection; and

a path combining unit configured to add all the sub-carrier group signals corresponding to each path, to thereby generate a sub-carrier group signal after path combining.

Claim 34 (Previously Presented): A multi-carrier CDMA communication apparatus comprising a transmitter and a receiver configured to perform transfer of data, using a multi-carrier CDMA method,

said transmitter including:

a setting unit configured to set a code rate of error correction, a number of sub-carrier groups, a frequency spreading rate, a number of code multiplexes of frequency spreading code, a frequency spreading code, a time spreading rate, a number of code multiplexes of time spreading code, and a time spreading code;

signal modulation units for the number of sub-carrier groups configured to perform frequency spreading for each sub-carrier signal of each channel constituting a sub-carrier group, based on the set conditions; and

time spreading units for the number of sub-carrier groups, configured to multiplex all the signals after the modulation processing and the frequency spreading for each sub-carrier signal, and perform time spreading with respect to the multiplexed signals for each sub-carrier signal; and

said receiver including:

time despreading units for the number of sub-carrier groups, configured to perform time despreading for each sub-carrier signal; and

signal demodulation units for the number of sub-carrier groups, configured to perform frequency despreading for each sub-carrier signal after the time despreading.

Claim 35 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 34, said signal modulation unit comprising:

a frame creation unit configured to create data frames including a known sequence, frame information, and data, for each sub-carrier group based on said set conditions;

a copy unit configured to generate data frames by the number of sub-carriers, by copying the data frame;

an information modulation unit configured to perform modulation processing with respect to each data frame;

a frequency spreading unit configured to perform frequency spreading with respect to each sub-carrier signal after modulation, based on said set conditions; and

a power control unit configured to perform transmission power control with respect to each sub-carrier signal after the frequency spreading.

Claim 36 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 34, wherein said setting unit sets the code rate of error correction, based on an input signal power to interference power ratio transmitted from said receiver; and

when there is no frequency spreading code to be allocated, at a time of setting the frequency spreading code and the time spreading code, said setting unit ensures an allocatable frequency spreading code by reducing the frequency spreading rate.

Claim 37 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 34, wherein said setting unit sets the code rate of error correction, based on an input signal power to interference power ratio transmitted from said receiver; and

when there is no frequency spreading code to be allocated, at a time of setting the frequency spreading code, said setting unit ensures an allocatable frequency spreading code by reducing the frequency spreading rate, and

when the code rate cannot be set even when there is no frequency spreading code to be allocated, said setting unit ensures an allocatable frequency spreading code, by ensuring a plurality of frequency spreading codes in the same sub-carrier group.

Claim 38 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 37, wherein said setting unit allocates the frequency spreading code, by leaving a predetermined frequency interval, while keeping orthogonality and hierarchical relationship between frequency spreading codes.

Claim 39 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 34, said signal demodulation unit comprising:

a frequency despreading unit configured to perform frequency despreading for each sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate an absolute value and a complex conjugate of transmission line estimation results, to normalize the complex conjugate by absolute value, to weight the sub-carrier signal by the normalization result, and to output the absolute value and the sub-carrier signal after weighting as an output;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after weighting, and to combine an absolute value for the sub-carrier group by adding all the absolute values; and

a path combining unit configured to multiply the sub-carrier group signal corresponding to each path by the absolute value of the respectively corresponding sub-carrier group, to thereby generate a sub-carrier group signal after path combining, by adding all the multiplication results.

Claim 40 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 34, said signal demodulation unit comprising:

a frequency despreading unit configured to perform frequency despreading in a unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate a complex conjugate of transmission line estimation results, to weight the sub-carrier signal by said complex conjugate, and to output the sub-carrier signal after weighting as an output;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after weighting; and

a path combining unit configured to add all the sub-carrier group signals corresponding to each path, to thereby generate a sub-carrier group signal after path combining.

Claim 41 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 34, said signal demodulation unit comprising:

a frequency despreading unit configured to perform frequency despreading in a unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate an absolute value and a complex conjugate of transmission line estimation results, to normalize the complex conjugate by the absolute value, to weight the sub-carrier signal by the normalization result, to estimate an interference power for each sub-carrier signal after the frequency inverse conversion based on the known sequence, and to divide the sub-carrier signal after weighting by the interference power;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after the synchronization detection, and to generate an absolute value for the sub-carrier group by adding all the absolute values; and

a path combining unit configured to multiply the sub-carrier group signal corresponding to each path by the absolute value of the respectively corresponding sub-carrier group, to thereby generate a sub-carrier group signal after path combining, by adding all the multiplication results.

Claim 42 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 34, said signal demodulation unit comprising:

a frequency despreading unit configured to perform frequency despreading in a unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate a complex conjugate of the transmission line estimation results, to weight the sub-carrier signal by the complex conjugate, to estimate an interference power for

each sub-carrier signal after the frequency inverse conversion based on the known sequence, and to divide the sub-carrier signal after weighting by the interference power;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after the synchronization detection; and

a path combining unit configured to add all the sub-carrier group signals corresponding to each path, to thereby generate a sub-carrier group signal after path combining.

Claim 43 (Currently Amended): A multi-carrier CDMA communication apparatus comprising a transmitter and a receiver configured to perform transfer of data, using a multi-carrier CDMA method,

said transmitter having signal modulation units for a number of sub-carrier groups, configured to perform frequency spreading and time spreading, after the frequency spreading, for each sub-carrier signal of each channel constituting a sub-carrier group, based on a predetermined condition; and

said receiver having signal demodulation units for the number of sub-carrier groups, configured to perform time despreading and frequency despreading for each sub-carrier signal.

Claim 44 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 43, said signal modulation unit comprising:

a frame creation unit configured to create data frames comprising a known sequence, frame information, and data, for each sub-carrier group based on said predetermined condition;

a copy unit configured to generate data frames by the number of sub-carriers, by copying a data frame;

an information modulation unit configured to perform modulation processing with respect to each data frame;

a frequency spreading unit configured to perform frequency spreading with respect to each sub-carrier signal after modulation, based on said predetermined condition;

a power control unit configured to perform transmission power control with respect to each sub-carrier signal after the frequency spreading; and

a time spreading unit configured to perform time spreading with respect to each sub-carrier signal after the frequency spreading.

Claim 45 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 43, said signal demodulation unit comprising:

a time despreading unit configured to perform time despreading in a unit of the sub-carrier signal;

a frequency despreading unit configured to perform frequency despreading in the unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate an absolute value and a complex conjugate of transmission line estimation results, to normalize the complex conjugate by the absolute value, to weight the sub-carrier signal by the normalization result, and to output the absolute value and the sub-carrier signal after weighting as an output;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after weighting, and to combine an absolute value for the sub-carrier group by adding all the absolute values; and

a path combining unit configured to multiply the sub-carrier group signal corresponding to each path by the absolute value of the respectively corresponding sub-carrier group, to thereby generate a sub-carrier group signal after path combining, by adding all the multiplication results.

Claim 46 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 43, said signal demodulation unit comprising:

a time despreading unit configured to perform time despreading in a unit of the sub-carrier signal;

a frequency despreading unit configured to perform frequency despreading in the unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate a complex conjugate of transmission line estimation results, to weight the sub-carrier signal by the complex conjugate, and to output the sub-carrier signal after weighting as an output;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after weighting; and

a path combining unit configured to add all the sub-carrier group signals corresponding to each path, to thereby generate a sub-carrier group signal after path combining.

Claim 47 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 43, said signal demodulation unit comprising:

a time despreading unit configured to perform time despreading in a unit of the sub-carrier signal;

a frequency despreading unit configured to perform frequency despreading in a unit of the sub-carrier signal;

a synchronization detector configured to perform line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate an absolute value and a complex conjugate of transmission line estimation results, to normalize the complex conjugate by the absolute value, to weight the sub-carrier signal by the normalization result, to estimate an interference power for each sub-carrier signal after the frequency inverse conversion based on the known sequence, and to divide the sub-carrier signal after weighting by the interference power;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after the synchronization detection, and to generate an absolute value for the sub-carrier group by adding all the absolute values; and

a path combining unit configured to multiply the sub-carrier group signal corresponding to each path by the absolute value of the respectively corresponding sub-carrier group, to thereby generate a sub-carrier group signal after path combining, by adding all the multiplication results.

Claim 48 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 43, said signal demodulation unit comprising:

a time despreading unit configured to perform time despreading in a unit of the sub-carrier signal;

a frequency despreading unit configured to perform frequency despreading in the unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after the frequency inverse conversion, based on a known sequence added to a data frame, to calculate a complex conjugate of the transmission line estimation results, to weight the sub-carrier signal by the complex conjugate, to estimate an interference power for each sub-carrier signal after the frequency inverse conversion based on the known sequence, and to divide the sub-carrier signal after weighting by the interference power;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after the synchronization detection; and

a path combining unit configured to add all the sub-carrier group signals corresponding to each path, to thereby generate a sub-carrier group signal after path combining.

Claim 49 (Previously Presented): A multi-carrier CDMA communication apparatus comprising a transmitter and a receiver configured to perform transfer of data, using a multi-carrier CDMA method,

said transmitter including:

a setting unit configured to set conditions of a code rate of error correction, a number of sub-carrier groups, a frequency spreading rate, a number of code multiplexes of frequency spreading code, a frequency spreading code, a time spreading rate, a number of code multiplexes of time spreading code, and a time spreading code;

signal modulation units for the number of sub-carrier groups configured to perform frequency spreading and time spreading for each sub-carrier signal of each channel constituting a sub-carrier group, based on the set conditions; and

said receiver having signal demodulation units for the number of sub-carrier groups, configured to perform time despreading and frequency despreading for each sub-carrier signal.

Claim 50 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, said signal modulation unit comprising:

a frame creation unit configured to create data frames including a known sequence, frame information, and data, for each sub-carrier group based on said set conditions;

a copy unit configured to generate data frames by the number of sub-carriers, by copying a data frame;

an information modulation unit configured to perform modulation processing with respect to each data frame;

a frequency spreading unit configured to perform frequency spreading with respect to each sub-carrier signal after modulation, based on said set conditions;

a power control unit configured to perform transmission power control with respect to each sub-carrier signal after the frequency spreading; and

a time spreading unit configured to perform time spreading with respect to each sub-carrier signal after the frequency spreading.

Claim 51 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, wherein said setting unit sets the code rate of error correction, based on an input signal power to interference power ratio transmitted from said receiver, and

when there is no frequency spreading code nor time spreading code to be allocated, at a time of setting the frequency spreading code and the time spreading code, said setting unit ensures an allocatable frequency spreading code by reducing the frequency spreading rate.

Claim 52 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, wherein said setting unit sets the code rate of error correction, based on an input signal power to interference power ratio transmitted from said receiver, and

when there is no frequency spreading code nor time spreading code to be allocated, at the time of setting the frequency spreading code and the time spreading code, said setting unit ensures an allocatable frequency spreading code by reducing the frequency spreading rate, and

even when there is still no frequency spreading code nor time spreading code to be allocated, said setting unit ensures an allocatable frequency spreading code, by ensuring a plurality of frequency spreading codes in the same sub-carrier group.

Claim 53 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, wherein said setting unit sets the code rate of error correction, based on an input signal power to interference power ratio transmitted from said receiver, and

when there is no frequency spreading code nor time spreading code to be allocated, at the time of setting the frequency spreading code and the time spreading code, said setting unit ensures an allocatable frequency spreading code by reducing the frequency spreading rate;

even when there is no frequency spreading code nor time spreading code to be allocated, said setting unit ensures allocatable frequency spreading code, by ensuring a plurality of frequency spreading codes in the same sub-carrier group; and

even when there is no frequency spreading code nor time spreading code to be allocated, said setting unit ensures allocatable frequency spreading code and time spreading code, by ensuring a plurality of frequency spreading codes in the same sub-carrier group, and increasing the number of multiplexes of the time spreading code.

Claim 54 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, wherein said setting unit sets the code rate of error correction, based on an input signal power to interference power ratio transmitted from said receiver, and

when there is no frequency spreading code nor time spreading code to be allocated, at the time of setting the frequency spreading code and the time spreading code, said setting unit ensures an allocatable frequency spreading code by reducing the frequency spreading rate;

even when there is still no frequency spreading code nor time spreading code to be allocated, said setting unit ensures allocatable frequency spreading code, by ensuring a plurality of frequency spreading codes in the same sub-carrier group; and

even when there is still no frequency spreading code nor time spreading code to be allocated, said setting unit ensures allocatable frequency spreading code and time spreading code, by ensuring a plurality of frequency spreading codes in the same sub-carrier group, and decreasing the time spreading rate.

Claim 55 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, said signal demodulation unit comprising:

a time despreading unit configured to perform time despreading in a unit of the sub-carrier signal;

a frequency despreading unit configured to perform frequency despreading in the unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate an absolute value and a complex conjugate of transmission line estimation results, to normalize the complex conjugate by the absolute value, to weight the

sub-carrier signal by the normalization result, and to output the absolute value and the sub-carrier signal after weighting as an output;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after weighting, and to combine an absolute value for the sub-carrier group by adding all the absolute values; and

a path combining unit configured to multiply the sub-carrier group signal corresponding to each path by the absolute value of the respectively corresponding sub-carrier group, to thereby generate a sub-carrier group signal after path combining, by adding all the multiplication results.

Claim 56 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, said signal demodulation unit comprising:

a time despreading unit configured to perform time despreading in a unit of the sub-carrier signal;

a frequency despreading unit configured to perform frequency despreading in the unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate a complex conjugate of transmission line estimation results, to weight the sub-carrier signal by the complex conjugate, and to output the sub-carrier signal after weighting as an output;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after weighting; and

a path combining unit configured to add all the sub-carrier group signals corresponding to each path, to thereby generate a sub-carrier group signal after path combining.

Claim 57 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, said signal demodulation unit comprising:

a time despreading unit configured to perform time despreading in a unit of the sub-carrier signal;

a frequency despreading unit configured to perform frequency despreading in the unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate an absolute value and a complex conjugate of transmission line estimation results, to normalize the complex conjugate by the absolute value, to weight the sub-carrier signal by the normalization result, to estimate an interference power for each sub-carrier signal after the frequency inverse conversion based on the known sequence, and to divide the sub-carrier signal after weighting by the interference power;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after the synchronization detection, and to generate an absolute value for the sub-carrier group by adding all the absolute values; and

a path combining unit configured to multiply the sub-carrier group signal corresponding to each path by the absolute value of the respectively corresponding sub-carrier group, to thereby generate a sub-carrier group signal after path combining, by adding all the multiplication results.

Claim 58 (Previously Presented): The multi-carrier CDMA communication apparatus according to claim 49, said signal demodulation unit comprising:

a time despreading unit configured to perform time despreading in a unit of the sub-carrier signal;

a frequency despreading unit configured to perform frequency despreading in the unit of the sub-carrier signal;

a synchronization detector configured to perform transmission line estimation for each sub-carrier signal after frequency inverse conversion, based on a known sequence added to a data frame, to calculate a complex conjugate of transmission line estimation results, to weight the sub-carrier signal by the complex conjugate, to estimate an interference power for each sub-carrier signal after the frequency inverse conversion based on the known sequence, and to divide the sub-carrier signal after weighting by the interference power;

a combining unit configured to generate a signal for the sub-carrier group by adding all the sub-carrier signals after the synchronization detection; and

a path combining unit configured to add all the sub-carrier group signals corresponding to each path, to thereby generate a sub-carrier group signal after path combining.

Claim 59 (Previously Presented): A multi-carrier CDMA transmitter which transmits data, using the multi-carrier CDMA method, said transmitter comprising:

signal modulation units for the number of sub-carrier groups, configured to perform frequency spreading for each sub-carrier signal of each channel constituting a sub-carrier group, based on a predetermined condition; and

time spreading units for the number of sub-carrier groups, configured to multiplex all the signals after the modulation processing and the frequency spreading for each sub-carrier

signal, and perform time spreading with respect to the multiplexed signals for each sub-carrier signal.

Claim 60 (Previously Presented): A multi-carrier CDMA transmitter which transmits data, using the multi-carrier CDMA method, said transmitter comprising:

a setting unit configured to set conditions of a code rate of error correction, a number of sub-carrier groups, a frequency spreading rate, a number of code multiplexes of frequency spreading code, a frequency spreading code, a time spreading rate, a number of code multiplexes of time spreading code, and a time spreading code;

signal modulation units for the number of sub-carrier groups configured to perform frequency spreading for each sub-carrier signal of each channel constituting a sub-carrier group, based on the set conditions; and

time spreading units for the number of sub-carrier groups, configured to multiplex all the signals after the modulation processing and the frequency spreading for each sub-carrier signal, and perform time spreading with respect to the multiplexed signals for each sub-carrier signal.

Claim 61 (Currently Amended): A multi-carrier CDMA transmitter which transmits data, using the multi-carrier CDMA method, said transmitter comprising:

signal modulation units for the number of sub-carrier groups, configured to perform frequency spreading and time spreading, after the frequency spreading, for each sub-carrier signal of each channel constituting a sub-carrier group, based on a predetermined condition.

Claim 62 (Previously Presented): A multi-carrier CDMA transmitter which transmits data, using the multi-carrier CDMA method, said transmitter comprising:

a setting unit configured to set conditions of a code rate of error correction, a number of sub-carrier groups, a frequency spreading rate, a number of code multiplexes of frequency spreading code, a frequency spreading code, a time spreading rate, a number of code multiplexes of time spreading code, and a time spreading code;

signal modulation units for the number of sub-carrier groups configured to perform frequency spreading and time spreading for each sub-carrier signal of each channel constituting a sub-carrier group, based on the set conditions.

Claim 63 (Currently Amended): A multi-carrier CDMA receiver which receives data, using multi-carrier CDMA method, said receiver comprising:

time despreading units for the number of sub-carrier groups, configured to perform time despreading for each sub-carrier signal; and

signal demodulation units for the number of sub-carrier groups, configured to perform frequency despreading, after the time despreading, for each sub-carrier signal after the time despreading.

Claim 64 (Currently Amended): A multi-carrier CDMA receiver which receives data, using the multi-carrier CDMA method, said receiver comprising:

signal demodulation units for the number of sub-carrier groups, configured to perform time despreading and frequency despreading, after the time despreading, for each sub-carrier signal.